Articulating Methodology – Weaving a Trans-Disciplinary Knowledge

*Maria Edna Moura Vieira[1] Simone Alves-Hopf[2] José Tomás Real Collado[3]
Maria da Graça Luderitz Hoefel[4]

*[1]Department of Medicine, University of Valencia. Spain
Department of Public Health. University of Brasilia, Brazil
[2]Faculty of Medicine. Friedrich-Schiller University of Jena. Germany
[3]Department of Medicine. University of Valencia, Spain
[4]Department of Public Health. University of Brasilia, Brazil*

[1]cartasparaednamoura@gmail.com, [2]sfisiocardio@gmail.com, [3]Jose.T.Real@uv.es
[4]gracahoefel@gmail.com

Abstract[1]

Background: With the emergence of the SARS-CoV-2 pandemic, the educational context became more complex, and other challenges were added to the already-existing ones. The way of doing and thinking about education mediated by digital technologies emerged suddenly. It put our view of the world into question because the world has changed, we are no longer the same, and the need for humanitarian health and transdisciplinary education has expanded in all contexts. The new educational reality is evidenced by the social distancing and the teaching and learning processes, requiring prepared teachers and committed to the act of educating. The current pandemic exposed some needs that foster policies, projects and actions with innovative strategies, which enhance learning, so that participants are immersed in an inclusive, trans-disciplinary, dialogic, free and universal education, with a view to unraveling the complexity of social interactions. The new reality aspires to generate a transforming awareness of society, in which people recognize themselves as part of the problems, but above all as part of the solutions. In the education and health sectors, it is essential to reconstruct dynamics, processes, participatory methodologies, and forms of democratic management, which are reaffirmed in the daily practice of educators and health professionals. Objective: Systematize the concepts of the Articulating Methodology (AM) with the Permanent Health Education principles in a perspective that promotes transdisciplinarity, multiple identities, knowledge exchanges and singularities that configure the subjects involved in the education and learning act. Method: This is a descriptive-exploratory study carried out in three stages: description of

the authors' personal and professional experiences; conducting of bibliographic research; conducting of an integrative review for a broad discussion on the contextualization of active methodologies in the education and health sectors. Results: We identified important elements in the bibliographic and integrative review that can be added to the Articulating Methodology. In addition, we note that information technology can facilitate trans-disciplinary, as well as a fast, effective and inclusive communication, as long as some dimensions brought by the Articulating Methodology (e.g. lovingness, humanization, intersectoriality, for example, articulation of education and health sectors), interculturality and internationalization of knowledge. Conclusion: We emphasize that it is essential to reaffirm the importance of the role of the educator in the construction of knowledge, whether in the education and health sectors, however, it is necessary to develop a "sensitive reason" for a more humanized practice filled with meanings, emotions and motivation. The applicability of AM, as a device that enhances Permanent Health Education, reinforces dialogue, exchanges of experiences, trans-disciplinary, intersectoral and intercultural actions. In addition, Articulating Methodology, through Proactive Agendas, encourages social participation, the use of information technologies and the creation of bridges between policy maker, managers, inter-disciplinary professionals and social environment, allowing the tone of the narratives and propositions to emerge from the experiences, voices and intercommunication of the participants, thus, enabling a direct impact on the practice of educators and health professionals.

Keywords: *Active Methodology, Permanent Health Education, Education, Health, Informatics, Trans-Disciplinary*.

1. Introduction

Education on the world context, before the pandemic caused by SARS-CoV-2, presented challenges that had not been overcome for decades (e.g. gaps in the organizational structure and permanent education processes of the teachers and health professionals). The pandemic has only increased these gaps, but also exposing the challenges that require public policies and methodological approaches with innovative strategies forward to learning and formation enhancing, putting the subjects in an inclusive, dialogic, inter/transdisciplinary, emancipatory, accessible education. In a broader view of pedagogical practice, these policies and methodological approaches must collaborate with individual, collective, political, social, economic and cultural development for a sustainable society.

With the current pandemic, we are facing a situation that requires collaboration and sharing among educators (Morgado, 2020). Morin (2020) warns of the need of a new education in the pandemic and post-pandemic world, highlighting the importance of topics such as students dealing with their fears, anxieties, and uncertainties in light of the new post-pandemic society. At the same time, this author points to the importance of a new educational order, a new gift, where education is the engine and the main device to overcome our anxieties and uncertainties.

> Before, we thought there was certain progress (e.g. progress in education and student feelings of fear and anxiety) and now the future is uncertain. Therefore, to bear, to face uncertainty is not to sink into agony, to know that it is necessary, in a way, to participate with the other, in something in common, because the only answer for those who have the distress of dying is love and life in common. (Morin, 2020, Fronteiras de Pensamento).

According to Boff (2020), COVID-19 is the consequence of humanity's lack of knowledge transfer, in this instance the education should be reinvented, for example, Students and educators are facing uncertainties and fears in light of the pandemic. This author also warns that we must reinvent ourselves as human beings.

> The best place and the best way to recreate new relationships and a new projection of what it is to be human, male and female, is education, because education focuses on people. Teachers have the extraordinary mission of redesigning another type of inhabitant of Planet Earth. (Boff, 2020, Master Class).

Saviani (2010) corroborates the view of Boff (2020), that "educational work is the act of producing, directly and intentionally, in each individuum, the humanity produced historically and collectively" (Saviani, 2010, p.13). Furthermore, Morin reaffirms the need for educating for the understanding of human beings in their complexity.

Educating to understand mathematics or any other discipline is one thing. Educating for human understanding is another, that is precisely the spiritual mission of education, to teach understanding among people as conditions and guarantee of the intellectual and moral solidarity of humanity. (Morin, 2001, p.81).

In this perspective, it is essential that education and science, in general, leave fragmented practices behind, and move towards an upgrade (Morin, 2015), where the act of teaching and learning is bathed by connecting knowledge, practices, communication, and information in an inter- and transdisciplinary way.

Freire (1996) corroborates the authors above, when defending an education that seeks to explore reality and form critical consciences as a path to the emancipation of the oppressed. For Freire (1983, p. 9), "commitment, typical of human existence, only exists in the engagement with reality, whose waters truly committed men get wet and drenched. Only then, the commitment is true".

We consider that the diversity of subjects and objects in search of connections makes the classroom a complex phenomenon in all aspects; even so, this environment is ideal for starting the process of changing mentalities/attitudes/ideologies shared among subjects. However, the fragmentation of knowledge in these educational spaces is implicitly and explicitly present, considering that they present itself as a mesh or a plot. It is enough to observe its traditional structure of time division into disciplines disconnected from each other and with reality, considering these subjects are taught only for content memorization.

It is noteworthy that content memorization is necessary in some fields of knowledge, such as medicine. However, it can be pleasurable when the student is faced with clinical cases experienced in the outpatient and hospital reality. Therefore, it is important to think of education as an interdisciplinary network that works forward to transdisciplinary communication, connecting the individual and

collective perspective with each other and with reality, so that the educator and the student acquire a new attitude towards reality and needs, for a liberating pedagogical practice of meeting the love, beauty, hope and utopia of Paulo Freire.

It is imperative to rethink all level of education through participatory didactic-pedagogical approaches (e.g. active methodologies, learning facilitation, etc.), which should be fostered for health and education professionals. This formation should be aligned with health promotion, encompassing the dimensions of intersectoriality, interculturality, subjectivity, and internationalization of knowledge, through positive, dialogic, transdisciplinary and critical-reflective language. As didactic-pedagogical approaches, the active methodologies can contribute to enhance the learning process in the school and academic fields.

However, it is imperative to foment a continuous and intense flow of deterritorialization and dislocation (Ceccim & Merhy, 2009), since participatory didactic-pedagogical approaches must meet the principles of Permanent Health Education (PHE), such as training, management, service, and social participation. PHE is a pedagogical concept used "to express the relationship between teaching and actions and services, articulating teaching and health care" (Andrade, Meirelles & Lanzoni, 2011, p. 374) in association with its principles of Policy of Education Permanent in Health (Brasil, 2007).

Here, we reiterate the need of participatory approaches, especially at a time of isolated knowledge, as it promotes connections, exchanges, learning, autonomy, and the creation of learning collectives for daily practice. Bringing to the educational spaces, not only academic, but also school, it is needed to foster transdisciplinarity, to tread a path for the reconnection of beings and knowledge, making knowledge relevant and contextualized, in a process of translating critical reflections (Gadotti, 2003; Morin, 2015).

In this perspective, the learning space must be considered as a promoted health environment and systematization of knowledge and affections, making the

education generated in these spaces the very materialization of the meaning of life, learned from COVID-19 (Moura-Vieira, Hoefel, & Collado, 2021).

It is imperative to reduce the learning losses that have occurred in the last two years of the pandemic for eliminating inequalities resulting from life differences of each one and to maintain the opportunities for advancement for all. In this instance, integrating active methodologies become essential in educational environment, for example, didactic-pedagogical practices must constantly reinvent themselves, in a process of action-reflection-action-reflection.

Therefore, in this article, we will describe the Articulating Methodology (AM), as a training device, for the intersectoral work between education and health. Articulating Methodology is a didactic-pedagogical approach that improves the teaching and learning process, using different methodologies and participatory methods, whose will be describe in the further sections of this article.

The AM enables, through a situational diagnosis, the identification/mapping of personal, work, territorial experiences/views, as well as the potential of the subjects involved, for the construction of transdisciplinary knowledge. In view of this, the main goal of this article is to systematize the concepts and theoretical assumptions of the Articulating Methodology with the principles of Permanent Health Education, in a perspective that promotes transdisciplinarity, multiple identities, exchanges of knowledge and singularities between the subjects involved in the act of teaching and learning.

2. Methodology

This article is characterized as a theoretical-conceptual extension of a qualitative, exploratory, and participatory investigation, which considered three systematic and complementary steps: *Step I - Description of the Authors' Experiences; Step II - Literature Review and Conceptualization of the Articulating Methodology (AM);*

Step III - Integrative Review of Active Methodologies (Details in Moura-Vieira, Alves-Hopf, Collado, & Hoefel, 2021).

Step I: In this step, we describe in narrative form, in the first person, the theoretical-practical experiences of the main author, taking her concerns as a starting point. This narrative is complemented in an action-reflection-action-reflection process of the main author's lived experiences with other authors to establish an inter- and transdisciplinary connection between the authors, culminating in this research work.

Step II: For the Literature Review, we use some publication of some authors/thinkers who served as the basis for the conceptual structuring of the Articulating Methodology. The discussed concepts for structuring AM have their theoretical foundation in the Paulo Freire Culture Circle (Freire, 1996), in the Problematization Methodology/Maguerez's Arch (Berbel, 2011), Image Analysis Methodology (Hoefel, 2016), and Method of Vera Birkenbihl (Birkenbihl, 2007a, 2007b).

Step III: The Integrative Review, as a research method that summarizes the past of empirical or theoretical literature for a comprehensive understanding of the phenomenon studied (Botelho, Cunha, & Macedo, 2011), putt to the previous steps important findings for a detailed discussion about the contextualization of active methodologies used in times of pandemic. For such contextualization, the Integrative Review is carried out in stages: Identification of the theme and research question; Establishment of inclusion/exclusion criteria; Identification of pre-selected studies; Categorization of pre-selected studies; Analysis and Interpretation of studies; and Synthesis of findings (Botelho, et. al., 2011).

Through these systematic and complementary steps, it was possible to carry out a broad exploration of the theoretical concept of transdisciplinarity in the construction of knowledge and in the inter- and transdisciplinary communication between education and health. Such conceptual exploration was enriched with the authors' personal and professional experiences, the results of the literature and integrative

review, and the systematization of the theoretical concepts of the Articulating Methodology with the principles of PHE.

We also emphasize that the exploration of the concept of transdisciplinarity has not been exhausted in this article, however, we consider that transdisciplinarity needs to be thematized here, as it is primordial in scientific communications, especially when these communications involve human interactions filled with complexity and uncertainties, considering the act of teaching and learning. Figure 1 represents the conceptual interactions that will be discussed below.

The relationship between Trans-Disciplinarity and Permanent Health Education was presented indirectly, because as at first, PHE was intended to join only two areas of knowledge (health and education). Furthermore, we understand that this relationship goes beyond the proposal previous; in this instance, we try to schematize this relationship with our methodological approach to establish a bridge between these concepts with the intention of strengthening this relationship.
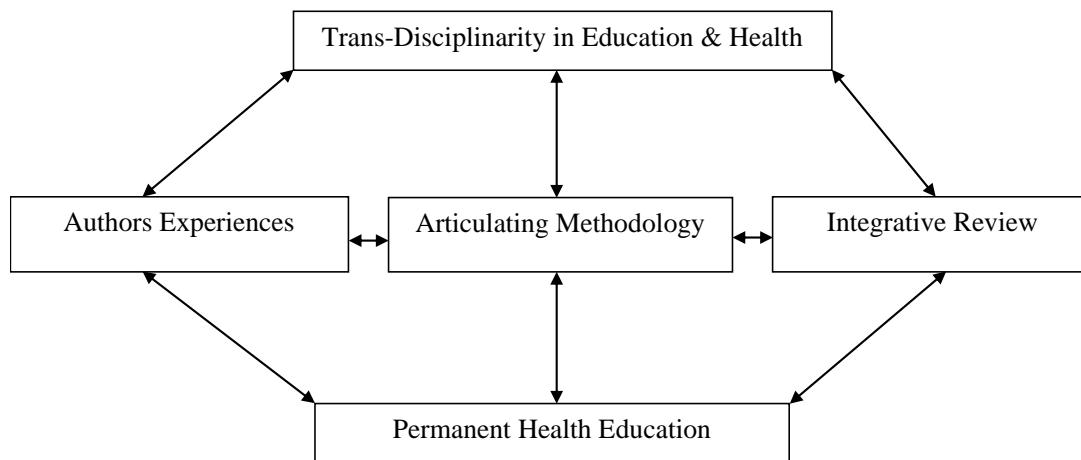
Figure 1: Conceptual Relationship between Trans-Disciplinary Communication, Articulating Methodology and Permanent Health Education in the Construction of Knowledge.

3. Results and Discussion

3.1 Main Author's Experiences: A Narrative Filled with Encounters

In chronological sequence, a first-person narrative about the experiences and views of the main author of this paper is presented to share her historical pathway full of emotions and motivation, which culminated in the creation of the Articulating Methodology as a transdisciplinary communication strategy in the process of teaching and learning.

Since I started working as a teacher about 20 years ago, I have never felt fully prepared to deal with the totality of social, cultural, and political contexts that the act of educating is permeated with. At the same time, I was also working with the development and implementation of public policies within the scope of the Ministry of Health in Brazil, which gave me the basis for an intersectoral, intercultural and interdisciplinary vision. On the one hand, I started to observe and reflect on teachers' complaints regarding the students' learning difficulties, and, of these, in relation to the educational methods adopted in the educational environment. On the other hand, I observed the complaints of health professionals about the disagreements and consensus on health policies, projects and actions aimed at humanized practices and equity.

With my accumulated experience, I perceived situations and consequences provoked from the conflicts and controversies arising from different political, social, and cultural interests, in the scope of the health and education sectors and in the workplace relationships.

In this movement, it is possible that the conflicts, uncertainties, and concerns of this audience were like mine. Thus, in the educational sector, I started to experiment with different pedagogical methods and approaches (e.g. Freirean Culture Circle, Problematization Methodology, etc.) according to the stage and modality of teaching and the search for new understandings of the world to improve my

pedagogical practice and to contribute with a more pleasurable and humanized work. In the health sector, I started to bring my pedagogical, dialogical, emancipatory and transdisciplinary understanding, acquired in my educational experience, into health policy discussions, in a perspective of significant contribution to these policies and to a more democratic and equitable society project.

It was with these concerns, with this look, desires, affectations, and possibilities of inventing new ways of acting, that I decided to participate in training and tutoring, in 2014, in the Permanent Health Education (PHE) in Motion course. From this experience, I came to believe that, via PHE, it was possible to co-manage construction and reinvent work, and to visualize PHE also focused on the training processes of teachers. Furthermore, I started to drink from the fountain of Emerson Merhy and Ricardo Ceccim (i.e. they are the creators of Permanent Education in Health in Brazil). Thus, I found myself involved with PHE from the big toe to the last strand of hair, in a kind of body-theory-action, which I let myself take to the backlands of Brazilian author Guimarães Rosa. This author has captured the tone of my affections.

> [...] the Sertão is the size of the world. Sertão: it's inside us. Living - isn't it? It's very dangerous. Because we still don't know. Because learning to live is what living really is. produces me, then swallowed me, then spat me out of the hot mouth. (Rosa, 2019, p. 19)

I reaffirm that the path in the Sertão is not over. It opened so many paths and crossroads, and people are never finished. The Sertão is the size of people, the formation of human beings is the size of life. From this perspective, the importance of teachers going through educational/training processes on a permanent basis is noticeable, either through formal education proposals, in daily work relationships, or through their insertion in the sociocultural world through inclusive and pleasurable methodologies.

In 2018, I started my doctorate in a co-tutorship regime, when I met Collado who contributed to my internationalization of knowledge, as he brought me a perspective of another culture and another area of knowledge. In addition, in the same year, I met the Image Analysis Methodology (Hoefel, 2016), when I used it in a training process with teachers, with the theme of violence, at the invitation of Hoefel. It is noteworthy that I had been participating in research groups, since 2013, on indigenous, worker and immigrant health, coordinated by Hoefel. My experience in these research groups allowed me to approach other themes, and with the intercultural vision, and different realities and needs, always fostered by a view of a more holistic and humanizing collective health and full of meanings, from Hoefel.

I took advantage of this work to start my doctoral field research. And as my "flying amphibian" was in full swing, I began to cross-examine other methodologies and methods during the workshops, in dialogue with Alves-Hopf, based on the emergence of new variables, needs, potentials and affectations mapped during these workshops. The look of Alves-Hopf, who worked in the field of research "working memory, neurostimulation and neuroimaging" in this period, was of fundamental importance for the encounter with dimensions that consider the relationships of complexity in the teaching-learning process.

Thus, we build the Articulating Methodology, which emerged from the dimensions of health/education and personal and professional experiences' authors. It was in this context of reflexive experimentation, that we developed the Articulating Methodology, which tries to fill in the gaps found during my teaching career, full of concerns and curiosities. These methods complement each other in transversal dimensions and are not limited to conventional educational guidelines, which will be detailed in the following.

3.2. Articulating Methodology: Contextualization for Transdisciplinary Communication

The Articulating Methodology (AM) was created in 2018 based on the needs found in the didactic-pedagogical pathway of the authors. From a perspective of exchanging knowledge and experiences between education and health, the Articulating Methodology is structured by the joining of methods and methodologies based on scientific evidence.

The main theoretical and methodological assumptions of AM encompass dimensions that consider the complex relationships between human and the environment in which he is inserted. To understand this complexity, it is primordial to understand some neurocognitive, emotional/affective, political, economic, social, and environmental contexts. For this and other reasons, the AM highlights the realities of individuals in terms of their origins and reason for being, through participatory dialogue, exchange of experiences, knowledge, and affections, providing a personal and professional mapping of the individual, which allows the construction of knowledge in connection with the local reality. Some principles were incorporated into the AM to facilitate the development of actions and strengthen the interrelationships between those involved. These principles are:

i) Lovingness - This principle deals to expand the understanding of human beings and their emotions. This principle enables an educational action that provides emotional exchanges and awareness of those involved during the education process, allowing the building of an affection relationship based on respect, ethics and morals;

ii) Interculturality - This principle deals to value diversity, cultural identity and intercultural knowledge, respecting the ways of thinking and acting of subjects in a dialogic, respectful and democratic process. Furthermore, interculturality "also presupposes openness to ethnic, cultural and linguistic differences, positive

acceptance of diversity, mutual respect, the building of new modes of social relationship and greater democracy" (Lopez-Hurtado, 2007, p. 21- 22).

iii) Humanization - This is a principle of comprehensive health care. With it, it is possible to organize workspaces for a healthy and welcoming practice, making clear the importance of the inseparable bond that unites care and management in education and health;

iv) Internationalization of Knowledge - This principle deals to create an interconnection between scientific and popular knowledge among different areas, without, however, establishing real and abstract national boundaries between the forms of knowledge, whether academic or popular. It is noteworthy that the concept of internationalization of knowledge encompasses the development and growth of integrated educational systems and university relations beyond the nation (Marginson & Rhoades, 2002).

v) Intersectoriality - This principle adds a broad understanding of the planning, management and structuring of actions, which must be thought of in an articulated, transversal manner and focused on local needs.

Embedded with these principles mentioned above, the AM is structured with theoretical and methodological assumptions from some authors and thinkers, which reinforce human interactions with the collective and with the environment. Such theoretical assumptions are described below.

Paulo Freire Culture Circle (Freire, 1996) - The Paulo Freire Culture Circle is a dialogic strategy that generates a critical movement of people, knowledge and reflection for socio-educational transformation. The activities are organized in such a way that the moderator is organized with the participants in the shape of a large circle, which allows for dialogue and the exchange of knowledge. This dialogic strategy considers important principles of Paulo Freire's pedagogy, such as, for example, there is no transmission of vertical knowledge, passed from moderator to

participant, but the moderator and participants are considered distinct individuals, who build their opinions in a way transversal, thus enabling a transdisciplinary communication to "beyond oneself and beyond the other";

Problematization Methodology (Berbel, 2011) - Through Problematization Methodology and Arch Maguerez's, the aim is to develop skills and systematize the participants' experiences for a transdisciplinary construction of knowledge, from the perspective of human rationalities, in an action-reflection-action movement. The Problematization Methodology follows a sequence in the form of a circle, which begins with *theorizing the theme*, going through the *survey of hypotheses*, *propositions of solutions, application in reality, observation of reality, survey of key points, and starts again in a new theorization* (Berbel, 2011);

Image Analysis (Hoefel, 2016) **-** Image Analysis allows the interpretation and synthesis of theoretical constructs using images. Using of images, photographs and maps, it is possible to map/identify the potentials, needs and vulnerabilities present in human interrelationships. Images, photographs and maps allow the rescue of memories and facts that help us to understand a given phenomenon from a subjective and collective point of view, thus enabling the building of objective theories that are plausible to the local reality and the individual's experiences;

Vera F. Birkenbihl Method (Birkenbihl, 2007a, 2007b) - With the Vera Birkenbihl method, the aim is to develop the processes of learning and incorporation of knowledge through strategies that facilitate learning. These strategies consider aspects of psychology, neuroscience and neurocognition. During the execution of activities in this method, situations are created, via visualization and association techniques, which seek to recover the participant's memory, both conscious and subconscious memories. These memories help us to understand the subject from the point of view of their emotions, motivation and uniqueness.

With the advances in Information Technology, we emphasize that AM can be applied, both in face-to-face and virtual format. As for the application time of AM

activities, it varies, as this will depend on the topic to be approached/investigated/explored and may last for days or weeks. As organizational structure, the Articulating Methodology is applied in systematic, transversal, and complementary moments. These moments are described below.

Moment 01 - Situational Diagnosis: At this moment, we carried out a mapping of the personal, affective, and professional experiences experienced by the subjects. Through this moment, it is possible to identify emotional, motivational aspects, as well as needs, potentials and vulnerabilities incorporated in individual, collective and environmental relationships;

Moment 02 - Pleasurable Learning Processes: At this moment, we used association and visualization techniques that promote a dynamic and interactive dialogue between those involved, considering the discussion and reflection on the construction of inter- and transdisciplinary knowledge, based on dialogue and critical reflection;

Moment 03 - Promotion of Self-Care: At this moment, we seek to promote collective, artistic, and cultural interaction, for an exchange of knowledge and knowledge based on the stories of the participants. With playful activities and the use of Complementary Integrative Practices in Health, it is possible to promote health and encourage the practice of healthy habits;

Moment 04 - Construction of a Proactive Agenda: At this moment, we encourage participants to reflect on themselves, on the other, and on interpersonal and collective relationships, so that the action project is continuous and does not end with the end of the activities experienced during the application of the Articulating Methodology. This continuity must be the engine that drives people, in a harmonious movement between theory and practice for an intersectoral planning of actions, daily work agreements, and social transformation. In addition, Proactive Agendas enable the reinvention and organization of didactic-pedagogical practices that must be continuous in an Action Project in Service.

From this perspective, we reaffirm that AM has an enormous potential in the development of learning strategies and actions, as it enables strategies and actions to be aimed at social transformation. The strategies of AM and actions go beyond a single sector, a single discipline, and a single vision, it seeks a direction that branches out into different knowledge and experiences. It is worth stating that the study of human relationships is in fact very complex, especially when we observe emotional and motivational aspects in the act of teaching and learning. These aspects no longer find sufficient explanation in isolated disciplines and knowledge, but in the junction of knowledge, which transdisciplinarity can bring, in its essence. Thus, the Articulating Methodology seeks to strengthen this essence, considering human and the environment, in which he is inserted, as inseparable elements.

3.3 Integrative Review: Active Methodologies in the Act of Teaching and Learning

The search scheme of the Integrative Review is presented in Figures 2. From a total of 66 articles found, 13 were selected to compose our analysis, interpretation, and synthesis.

In some studies, it was possible to observe technological innovations and different methodologies, such as, for example, Participative Virtual Teaching with Information and Communication Technologies (Arruda & Siqueira, 2021), Animated Infographic on Permanent Health Education (Dorneles et. al., 2020), Cooperative Learning (Ripoll, et. al., 2021), Virtual Group Discussion (Kuar et. al., 2021), YouTube Videos Learning (Luu, et. al., 2021), Using action-study plan (PDSA) Cycles (Mojdehbakhsh, et al. al., 2021), Gamification and Active Learning (Murillo-Zamorano, et. al. 2021), Information and Knowledge Learning (Sánchez, et. al. 2020), and Active Usage of Resilience Assets (Ivanov, 2021)
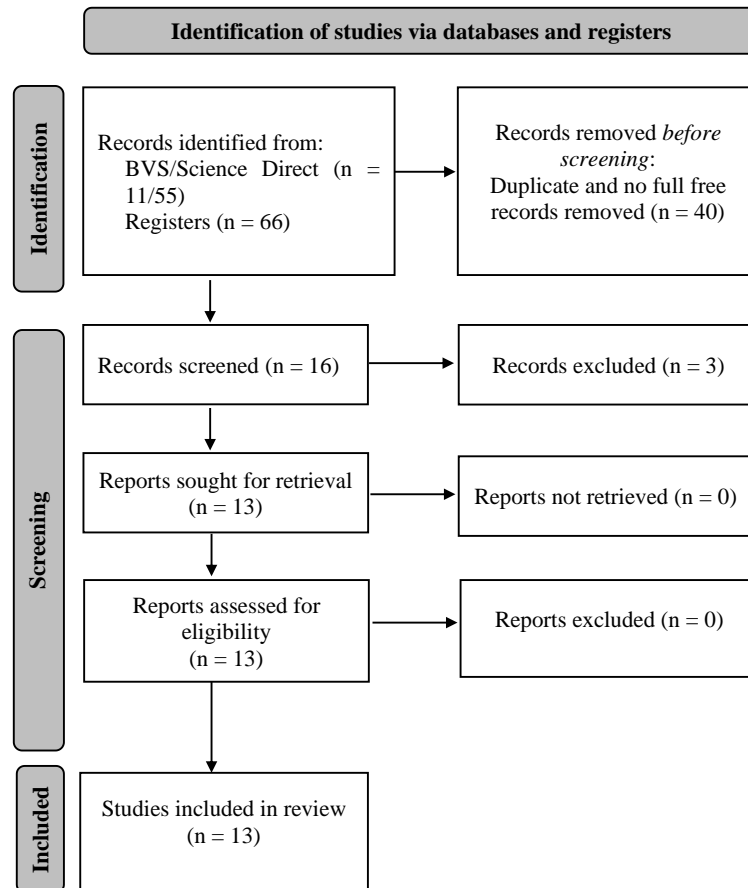
Figure 2: Representation of the selection process of the Articulating Methodology paper using Prisma 2020 Flow Diagram (Page et. al., 2020). Inclusion Criteria[2]

The studies showed that the approaches used showed important results that strongly consolidate the use of active methodologies to motivate the participation of the target audience (Kuar et. al., 2021); facilitate collaborative learning processes (Dorneles et. al., 2020; Ripoll, et. al., 2021); identify studies through databases and records of interaction and listening (Fernandes, et. al., 2020); promote participant satisfaction (Mojdehbakhsh, et. al., 2021); and encourage the use of virtual tools

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[2] For the integrative review, two independent authors (SAH & MEMV) searched on databases: Virtual Health Library (VHL), and ScienceDirect, using the keywords: active methodology AND permanent health education AND COVID-19/SARS-CoV-2 in Portuguese/English languages. The articles included for analysis were selected based on the reading of the abstracts; only full texts in English/Portuguese published between January 2020 - February 2021 were analyzed. Articles of bibliographic and systematic reviews, as well those that did not meet the inclusion criteria, were not admitted for analysis.

(Luu, et. al., 2021; Segovia & Gutiérrez, 2021; Mojdehbakhsh, et. al., 2021; Sánchez, et. al., 2020).

With the findings of this Integrative Review, we identified important elements (e.g. active participation, organization and interaction techniques, gamification, etc.) that can be added to the Articulating Methodology. These elements can be applied with the use of virtual devices and a planning of schematic activities, using different information technology devices and tools found in this research.

We emphasize that the integration of these virtual tools can strengthen the operational structure of the Articulating Methodology, since AM can also be applied in a virtual format. However, it is necessary to develop technological skills in education and health professionals, as observed in a survey, where teachers were interviewed, carried out by Moura-Vieira, Hoefel and Collado (2021). The results of this research showed that the abrupt incorporation of digital technologies, during the pandemic period of 2020-2021, caused great suffering to teachers, due to their lack of digital literacy and minimal working conditions.

We must not forget that in the preparation of these professionals, emotional, affective and motivational aspects must be considered, so that these professionals become multipliers of dialogical, healthy teaching-pedagogical practices, committed to interpersonal, collective, and above all, changes for a sustainable society. A summary of the analyzed articles, you can see in the Table 1.

3.4 Articulating Methodology in Connection with Permanente Health Education

If there's one thing this pandemic is teaching us, it's that we should take a closer look at the education and health sector, via plural and integral look with multiple dimensions, to transform the educational space into a space for dialogue and health promotion.

Table 1: Available Papers to Integrative Review Analysis.

AUTOR/YEAR/ JOURNAL	OBJECTIVE	METHODOLOGY	RESULTS
Arruda & Siqueira 2021. Práticas Educativas, Memórias e Oralidades - Revista Pemo	Present an educational and sustainable practice adopted in times of COVID-19 by students and teachers (Accounting Science).	Participatory Teaching with Information and Communication Technologies (ICT).	Virtual Importance of teachers training and autonomy of students.
Bezerra et. al. 2020. Revista Ciência Plural	Report the experience of students of health courses in the development of a case and its application in the form of a Problem-Based Learning	Problem-Based Learning	The development of a case using the methodologies that integrate Problem-Based Learning provided those involved with the experimentation of a creative process, rich, centered on knowledge.
Dorneles et. al. 2020. Revista Latino-Americana de Enfermagem	Develop an animated infographic on the concept of Permanent Health Education, according to the National Policy, and its main differences compared to both continuing education and health education.	Animated Infographic on Permanent Health Education	The animated infographic represents the daily work scenario and encourages reflection by the health care workers.
Fernandes et. al. 2020. BMC Medical Education	Plan, develop, implement, and evaluate a management specialization course in oncology using blended learning.	Combined Learning Methodology	The educational intervention proved satisfactory as evaluated using the first three levels of Kirkpatrick's evaluation model, confirming that blended learning can be used as a teaching approach in continued education at postgraduate level, with excellent levels of client satisfaction.
Ivanov 2021. International Journal of Logistics Management	Present a chart that consolidates different angles of efficient resilience and turns to the use of resilience capacities for the creation of Value.	(AURA) Active Usage of Resilience Assets Framework	The outcomes of our study can be used by supply chain and operations managers to improve efficiency and effectiveness by turning resilience from passive, cost-driving assets into a value creating, inclusive decision-making paradigm.
Kaur et. al. 2021. Advances in Physiology Education	Innovate the way of conducting the discussion in virtual group (sVGD) and evaluate the perception of graduate students about its effectiveness compared to conventional VGD and virtual GD.	Virtual Group Discussion (sVGD)	Pre-GD feedback revealed that the live session was preferred over virtual for the conduct of GD, whereas both live GD and sVGD were perceived to be more effective than VGD in the post-GD feedback.
Luu et. al. 2021. Journal of Surgical Education	Analyze the quality of videos on YouTube as an educational tool in learning how to perform a neck dissection, one of the key indicator cases for trainees in otolaryngology	Videos YouTube Learning	Free-to-access video repositories, such as YouTube, have become increasingly popular. They lack consistent quality and as such, global efforts should be taken to improve the breadth and depth of educational video content in otolaryngology.
Mojdenbakhsh et. al. 2021. Gynecol Oncol Rep.	Convert at least 50% of all outpatients' clinical meetings to telemedicine within one week of the initial intervention. Obtain feedback from patients about this new type of encounter and determine the potential interpersonal impact on patient care.	Using action-study plan (PDSA) cycles, the initial intervention was agreed at a meeting of physicians GynOnc.	A GynOnc clinic can rapidly implement telemedicine systems. With multidisciplinary team planning and standardized note templates, transitioning 50% of encounters to telemedicine and achieving high rates of consent documentation were accomplished in four weeks. This increase in telemedicine represented a measurable decrease in the amount of CO_2 emissions.
Murillo-Zamorano et. al. 2021. International Journal of Educational Technology in Higher Education	Present a successful classroom proposal in higher education to better understand its influence in terms of knowledge, skills, and engagement	Gamification and Active Learning (experimental group) and a Non-gamified Active Learning Teaching Condition (control group)	The generation of a co-creative and empowered gameful experience that supports students' overall value creation yields to satisfactory active learning setups without any loss of academic achievement and allowing to develop a series of skills especially relevant for twenty-first century professionals.

Ripoll et. al. 2021. Education for Chemical Engineers	Share the experience of adapting the Biochemical Engineering course, part of the Biotechnology program of the Francisco de Vitoria University (Madrid, Spain), to remote learning.	Cooperative Learning	Learning outcomes: Abstracting to extract relevant information from a practical case using the proper mathematical methods; Being able to obtain information from a practical case for the application of the principles of Biochemical Engineering; Discussion among classmates about the results and repercussions of a practical case. Finding a correct solution to a practical case.
Sales et. al. 2021. Research, Society and Development	Through the "Caixa Mental " promote the activities of teaching and university extension in the period of the pandemic incited by COVID-19	Information and Knowledge Technologies (TICs) and Methodologies at the Caixa Mental Project	Active "Caixa Mental" project brings to light the discovery of pedagogical innovations and production of material technology in the current panorama of COVID-19, using ICTs in line with the active methodologies.
Sanchez et. al. 2021. The Journal of Marine Education	Introduce a postgraduate course in Deep-Sea Exploration as a basis for active and virtual learning	Deep-Sea Exploration with a Basis for Active and Virtual Learning	The course methodology exposes students to the deep-sea community through challenges such as grant proposal writing (Researcher), business idea innovation tanks (Entrepreneur), and novel discovery annotations on deep-sea exploration cruises streamed live via telepresence (Explorer).
Segovia & Gutiérrez 2020. Journal of Physical Education and Sport	Evaluate the effects on the body composition of schoolchildren in a game based on high intensity interval training program (GB-HIIT) taught during physical education.	The Sport Education Model: High Intensity Interval Training (GB-HIIT) Program	In conclusion, GB-HIIT appears to be effective in countering effects on schoolchildren's body composition.

From the perspective of plural and integral education, it is necessary to place the educator's work at the center of debates and theoretical, ethical, aesthetic, political and methodological reflections. For this, it is imperative that the processes of teacher education encompass the context of human development and the integrality of the subject, from the perspective of Freire's pedagogy emancipatory, transdisciplinary, and loving education.

Human development is a process of expanding ranges (personal, social, economic, political) and is closely related to work. The positive relationship between human development and work is reciprocal. Health, Education and Human Development are interlinked, as there is no development process without proper attention to health and knowledge.

Likewise, the development of workers is connected to their own work. Work and workers constitute an inseparable dyad (Ceccim & Merhy, 2015). In the education and health sectors, the processes require broad communication, harmony and

correspondence with social needs, integrality, inclusion, internationalization of knowledge and with the pedagogical political projects.

In addition, in the context of education professionals, given the sociocultural vulnerability of their target audience, and aggravated by COVID-19, it appears that the organizational structure of educational spaces derived from current educational policies and their modes of operation do not offer sufficient possibilities for the reconstruction of dynamics, processes, participatory methodologies and forms of democratic management that are reaffirmed in practice.

In this context, the concept of PHE is defined as learning at work, in which learning and teaching are incorporated into the routines of organizations and into the work process. It proposes that the educational processes of health workers be carried out from the problematization of their own practice.

We understand that the PHE aims to discuss work and based on this work and seeks to transform the institutional space into a space for questioning, reflection, dialogue and construction of consensus, exchanges and co-production. It is based on the conception of critical education, meaningful learning and the appreciation of work as a source of knowledge.

It is important to point out that PHE is understood as more than a pedagogical or methodological concept according to Ceccim and Feuerwerker (2004). The PHE proposes a political process of dislocation and questioning that seeks to transform reality at work. In this sense, PHE was an educational model aimed at health professionals, moreover, we understand that PHE should also be incorporated into the training processes of education professionals.

PHE makes us glimpse a new scenario for education, as a response to the current needs imposed by the pandemic. For example, this could include the need to equip teachers to develop a "sensitive reason" (Maffesoli, 1987), guided by the

inseparability of training, management, care, and participation, in dialogue with new needs.

In this instance, the Articulating Methodology offers this possibility if we consider its methodological and didactic-pedagogical aspects with the creation of Proactive Agendas that reinforce participation, intersectoral work and educational and social transformation. AM establishes a friendly, complementary and transversal relationship with the PHE principles. We highlight that AM incorporates emotional, affective, transdisciplinary and motivational aspects into its practices, which meet interpersonal and collective changes.

4. Conclusion

With the current pandemic, education is no longer the same; it has become more complex, various challenges have been added to the already-existing ones (lack of infrastructure, lack of digital literacy for health and education professionals, lack of permanent health education processes), aggravating the working conditions of the educators.

The formation and affective aspects of educators become a concern, due to social distancing caused by social isolation, which has hindered the docent practice and establishing bonds and students' learning.

The current educational scenario presents fears and uncertainties, which requires policies, methodological approaches, projects and action for the training of education and health professionals, which are transversal by the PHE principles and AM concepts, from the perspective of transdisciplinary communication.

Furthermore, it is important, in educational and health spaces, to foster transdisciplinarity, participatory, intercultural, and dialogic approaches to follow a path for the reconnection of beings and knowledge.

In this sense, the Articulating Methodology can improve the in-service action and emotional skills of education and health professionals, where the professionals become multipliers of dialogical didactic-pedagogical practices, committed to the local reality and sustainable practices.

In this context, with the integrative review, we do not exhaust the findings about active methodologies; on the contrary, new experimental research is needed. However, we correlated of the findings of integrative review with the potentials of Articulating Methodology.

It should be noted that we observed the existence of several active methodologies that works in the perspective, moving from the vertical to the horizontal model in education, where actors build knowledge in an active and participatory way. On the other hand, we noted that the methodologies used need to include in their activities important aspects that AM defends, such as lovingness, interculturality, humanization, transdisciplinarity, internationalization of knowledge and intersectionality to understand the multiple dimensions of human existence.

It is imperative to train educators for the act of teaching and learning for the development of a "sensitive reason" (Maffesoli, 1987). Moreover, it is also important that the governments and policy makers offer logistic, administrative and didactic-pedagogic support for these educators to move forward to a more effective, quality education and humanized practice.

Finally, we concluded that Permanent Health Education stands out in this process, for promoting dialogue, where the tone of the narratives and propositions emerge from the experiences, voices and intercommunication of the participants.

5. Acknowledgement

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